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Il est généralement admis que le développement cognitif de l'enfant s'actualise au cours d'un processus d'interaction entre le sujet et son environnement immédiat, la famille. Inscrit dans le cadre d'une recherche sur les conditions mésologiques les plus susceptibles de favoriser ou d'entraver le développement des processus cognitifs, ce premier volet s'attache au problème de la mesure des interactions parents-enfants. Prenant la forme d'une revue de la documentation, il scrute les diverses méthodes actuellement disponibles.

L'étude s'appuie sur une bibliographie d'une trentaine d'articles et d'ouvrages en majorité de langue anglaise et généralement postérieurs à 1960. Les méthodes sont regroupées en cinq sections: le questionnaire destiné aux parents, l'interview des parents, l'observation structurée en laboratoire, l'observation non structurée, l'observation en milieu naturel. Il s'agit: 1. de décrire les méthodes, qu'elles soient opérationnalisées en termes de comportements ou d'attitudes; 2. de mettre en évidence les avantages et faiblesses de ces méthodes; 3. d'examiner des approches qui augmenteraient la variance expliquée entre les variables-parents et les variables-enfants.

Eliminer les effets parasites de la désirabilité sociale demeure la bête noire de toutes ces méthodes. En somme, les parents ne se comportent pas comme d'habitude en présence d'un observateur et ils tendent à se décrire à la lumière des comportements conformes aux normes dominantes plutôt qu'à partir de leurs comportements réels. Quant à savoir si l'une de ces méthodes est plus valable que les autres, cela demeure impossible. Tant qu'on n'aura pas trouvé le moyen d'observer à son insu une famille dans son milieu naturel, on ne pourra guère en connaître "in vivo" les caractéristiques. Ce rêve du chercheur, en plus d'achopper à des problèmes techniques, soulèverait de sérieux problèmes déontologiques. Les études longitudinales semblent toutefois pouvoir

remédier en partie à de telles difficultés.

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METHODOLOGICAL CONSIDERATIONS FOR MEASURES OF PARENT-CHILD INTERACTION

Equipe de Recherche sur
les Interventions en Sciences Humaines
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Ecole de psycho-éducation
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METHODOLOGICAL CONSIDERATIONS FOR MEASURES OF PARENT-CHILD INTERACTION *

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1. INTRODUCTION

It is generally accepted that cognitive development in children is attained through a process of interaction between the child and his immediate environment (i.e. the family).

The general scope of this research is to investigate the conditions within the family milieu which are most likely to affect the development of cognitive processes.

To effectuate such a study, it is necessary to resolve a number of specific problems which require elaboration and careful consideration. These problems may be grouped into the following four issues:

(1) The methodological problems inherent to measures of parent-child interaction;
(2) the selection of appropriate variables;
(3) a theory of cognitive development;
(4) hypotheses regarding the structure of the family environment.

It is hardly necessary to note that these four domains of research are inter-related and that they will be analysed individually.

There exists another general problem which may at first seem minor yet deems utmost importance in view of the preceding discussion on the four large issues; this problem is of a semantic nature and concerns the choice of vocabulary.

So far, we have used a very general vocabulary to describe the object of the subject-object dyadic relationship: "objectal environment" or conditions within the family milieu. Yet such terms seem too (loose) general and not easily amenable to measurement. These terms must be: firstly, more accurate; and secondly, they must be operationnally defined.

That the family environment plays an important role in personality development is a commonly made statement. Meanwhile, in order to demonstrate a "family" influence authors in the field often use parameters which vary greatly; such as childrearing practices, parental attitudes, childrearing attitudes, family relations, family environment, family influence, and many others. In a similar manner, this phenomena is reproduced in the literature when one searches for social class influences of personality development.

This paper is concerned with reviewing the range of methods presently available to study parent-child interaction. The aim of this report is to a) describe the existing variations in measures of parent-child attitudes and behaviors, b) to highlight the merits as well as drawbacks of these techniques in an attempt to c) seek constructive avenues of research which will account for a greater degree of explanation between parental and child variables. The method proposed for this task is to first review the literature on the existing methods and then select pertinent issues which should be considered. There exist basically five methods for studying parent-child relations and childrearing practices (Lytton, 1971, p. 652): a) the questionnaire for parents, b) the interview of parents (structured and unstructured), c) observation of parent-child interaction in the structured laboratory situation, d) observation in the unstructured laboratory situation and e) naturalistic observation in the home. These methods can be divided into two distinct categories:

(1) the first two involve indirect measures of behavior and attitudes, and
(2) the latter three methods involve direct measures of behavior and attitudes.

2. THE QUESTIONNAIRE METHOD

In the 1950's the questionnaire method for assessment of parent-child interaction was quite widespread. It had the advantages of offering the prospect of finding efficient and economical methods for data collection.

Two types of questionnaires were developed. The first deals with the children's perception of parental behavior and childrearing practices. One such test is the Children's Report of Parental Behavior Inventory (CRPBI) developed by Schaefer (1965)[1] . Another example is the Parent-Child Relation Questionnaire (PCR) developed by Roe and Siegelman (1963) which measures the characteristic behavior of parents towards their young children, as experienced by the child. More recently, Giuli and Hudson (1977) have proposed a questionnaire measuring therapeutically induced change in a child's relationship with either or both parents. These attempts at measuring the child's perceptions of parent's behavior are based on one common assumption: parental behavior affects the child's development only to the extent to which that behavior is perceived by the child. For example, a parent may demonstrate an authoritative attitude in which case the child may or may not perceive the attitude; consequently, the child will then behave according to his percept.

The second type of questionnaire attempts to measure the parents' perception of their own behavior (e.g. Crandall and Preston, 1955) as well as attitudes (e.g. Shoben, 1949; Schaefer and Bell, 1958).

By far the most popular instrument used in this area was the Parent Attitude Research Instrument (PARI) developed by Schaefer and Bell (1958). From their review they had concluded that objectively measured attitudes toweard childrearing are significantly related to personality development in children. However, problems in method of analysis and design were also considered and left much doubt regarding the significance of the results. Even though a series of other investigators reported positive associations between parental and child measures, the evidence did little to change the original conclusion by Schaefer and Bell concerning

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[1] According to Schaefer (personal communication, 16 May, 1979) the CRPBI corresponds to parental behavior in a much more reliable fashion than the PARI. The CRPBI has been validated in several languages: Dutch, German, Italian, English (Schludermann et Schludermann, 1970).

the inherent methodological problems of their instrument. Today the bulk of evidence still suggests that the PARI does not predict adequately[2].

One may ask where do the problems originate in this or other similar forms of questionnaires on parental attitudes. The first major problem is proposed by Becker and Krug (1965) who suggest that the lack of control for response sets makes the findings equivocal. Since many of the questionnaires in this area reflect measures of authoritarian attitudes they are strongly influenced by (1) acquiescence - response set (tendency to agree) and (2) by the educational level of respondent, and (3) by the social class of the respondent. The work of Zuckerman, Norton and Sprague (1958) has most clearly demonstrated the influence of response sets.

In a factor-analytic study of the PARI the authors became alerted to the problem of acquiescence. For example, the democratic-attitude factor was logically the opposite pole of the authoritarian-control factor, yet the results on these two factors indicated that they were uncorrelated. This implied that many parents found it possible to agree equally well with attitudes advocating equalitarianism as with attitudes of authoritarian control which is a contradictory statement if made by the same parent. According to the authors this situation clearly demonstrated the effect of acquiescence.

The second influence on response sets in the use of self-report questionnaires is that unreliable measuremnts may result from individual differences in education, (Hamblin & Vanderplas, 1961). It is evident that much of the present day measurement involves group or individually administered "paper and pencil" tests which require a fair degree of

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[2] See Becker and Krug (1965) for a complete review of the results obtained with the PARI. Schaefer (personal communication, May 16. 1979) does not recommend use of PARI; in its place he recommands CRPBI.

reading and writing ability on the part of the respondent. The influence of educational level has also been studied by Zucherman, Norton and Sprague (1958) who found that the mother's education correlated significantly with 18 of the 23 PARI scales.

In a recent study, we have used the Dogmatism Scale (Rokeach, 1960) which was modified by one of us[1] and found that out of 36 parents who were classified in the high dogmatic group, only one had obtained a college or higher education. This finding indicated the association between parental education and their response to the dogmatism scale.

The third influence on response sets is language facility which varies according to social class. According to Becker and Krug (1965) language facility may affect the way in which self-report questions are interpreted and answered. In view of parental attitudes Garfield and Helper (1962) found the following relationship to be true: when mothers from different social classes showed a decrease in authoritarian attitudes the social-class level increased.

The second major source of dissatisfaction with self-report questionnaires is that they often pose questions of a retrospective nature, although this need not always be the case (i.e. projective type of tests). The inherent problems such as lack of reliability in respondents' answers, the fact that attitudes may change over time, the problem of attitudes specific to a given child, and problems of linking attitudes to behavior, entice many researchers to abandon this method. (Radke-Yarrow, 1963).

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[1] Rokeach-Larivée (1979). Echelle de Dogmatisme.

The solutions to these and other problems in using the questionnaire method range from complete abandonment to defiant acceptance. Those who would abandon this method do so in the hope of finding fewer problems in other methods (Becker and Krug, 1965 ; Lytton, 1971) whereas those who accept this method seek new solutions to old problems (Bell, 1958).

Let us consider some of the possible solutions to these old problems. We have noted that the first major problem which heavily affects the reliability of measurement in studies on parent child interactions is response set. In terms of acquiescence, Bell (1958) had indicated that parents have a desire to say the "right thing" in a testing situation. Bass (1955) has presented evidence contending that 75% of the reliable variance in the F- scale developped by Adorno et al. (1950), and which was extensively used in studies of the authoritarian personality, may be explained by an acquiescence set whereas only 25% was related to a content factor of authoritarianism.

Questions which require a response based on a continuum (i.e. Likert-Type scale) often involve an acquiescence "set" which leads to unreliable measurement. Several solutions have been proposed dealing with this thorny problem by Bell (1958). One approach is to construct items with contradictory content thereby providing a check on the acquiescence set. Yet this technique will require almost doubling the number of existing questions. In terms of practical applications a very long questionnaire has little chance of being completed properly. Considering these precautions, one of us (Larivée, 1979) modified the Rokeach Dogmatism scale in the following way: originally the content of every question was oriented in the same direction, i.e. a dogmatic person would agree to every item. In the modified version the direction of the content in each item was randomly assigned in order control for acquiescence. A second approach is to use the forced-choice formats which have been found relatively free of response sets (e.g. Piers-Harris, 1969) and thereby avoiding the tendency of responses for a regression toward the mean. The third approach has been to use scales which measure

acquiescence and then partial-out acquiescence by using an appropriate statistical procedure (ANCOVA). Yet another approach involves items which do not require the respondent to agree or disagree, but to pick an alternative which best describes how he feels. These above mentioned techniques attempt to augment the accounted for (explained) variance between two or more variables and also to increase the reliability of measuring instruments. Other methods of controling acquiescence have focused more on different methods of asking a question than on the content or structure of the questionnaire.

Although the problem of language facility is by no means easily resolved it can be greatly reduced by using trained interviewers so that the communication can rely mostly on verbal skills, which seem less biased by social class and education. Let us now cover some plausible solutions to the second source of major dissatisfaction: retrospective nature of questionnaires.

The problems dealing with the lack of confidence in retrospective reports and attitude change over time may be minimized by carrying out studies on parents of children at lower age levels, especially in the nursery school setting. Concurrently, Bell (1958) argued that adjustment patterns often emerge later in life. It seems, then, that either the phenomenon is studied retrospectively in its latter form or not studied at all. Bell (1958) strongly adheres to this point of view in that there is no secure way of predicting a group of parents whose children might show a deviation later on in life. Some authors like Mednick & McNeil (1968) have used a longitudinal design, by selecting high-risk groups of schizophrenic families and following-up these families closely over long periods of time. This was largely possible because the study was done in Norway where social registrars exist and enable researchers to follow-up individuals. In order to use this design for parent-child research much preparation and headway is still required; for example operational definitions of mother variables like warmth, autonomy and control.

Other problems such as parental favoratism regarding certain children, or sex differences as well as other parental reactions (i.e. to birth order) have been noted by Bell (1958). In this case there is a need to control for the "reactive factor" in parents and this may be accomplished by adequate control groups and partialling out such sex-linked or favoritism-linked sets (Lansky, 1967; Lewis, 1972).

In addition to these experimental precautions one must not omit the basic principles of questionnaire construction: clarity of vocabulary, expression of one idea per question, simplicity and comprehensibility of question and avoidance of technical or professional terms (Anastasi, 1968).

THE INTERVIEW

The interview is a classical method in parent-child research where usually the mother is interrogated. An example is the study by Sears, Maccoby and Levin (1957), whose measures were all taken from one single unbroken interview. The mother is asked about her practices in rearing her child as well as her attitudes and values. The topics of study vary from very specific variables like infant feeding, weaning and toileting history to broad generalization dimensions such as warmth-coldness and acceptance-rejection. When the objectives of a study go beyond descriptions of parent variables, (i.e. the study of "effects" of parental variables on children's behavior) we must take a more critical look at this source of information.

One of the most intriguing problems is the reliance on the mother as a source of reliable information. One can easily imagine that a happy or unhappy mood produced by temporary family conditions could produce a general set toward one type of answer (this factor is also present in all

other methods which are described in this paper). There are practically infinite variables and conditions which may influence this response set and it would seem virtually impossible to account for every such condition. Certainly the evidence on relations between parental variables and child outcomes by this method has reflected this problem. For example, Radke-Yarrow (1963) reported that correlations of +.21, even though significant between variables in rearing and outcome, have been defended too long. The question arises as to how correlation coefficients of different sample sizes (i.e. samples of 10 versus 150) may be interpreted. According to Ferguson (1971, p. 116) one of the more informative ways of interpreting the correlation coefficient is in terms of explained variance (i.e. computed by the square of the correlation coefficient). Thus a correlation of +.21 represents only 4 per cent of the variance of one variable (i.e. children's behavior) is predictable from the variance of the other variable (i.e. childrearing practice). Even if some investigators report that the interview was "intensive" and "a good rapport" was established this approach treads upon many dangerous assumptions.

Apart from keeping personal bias aside there arises a second problem dealing with the capacity for verbalization and memory, which may vary according to education and socio-economic class. The influence of these two latter factors may also affect the capacity for mothers to make fine discriminations and difficult syntheses. In a one hour interview we expect to learn the mother's relationship with her child as well as his reactions in many different situations extending over a childhood span of years. How does the mother conceptualize and define the variations in intensity of a dimension which is mostly due to situational variables? Yarrow (1963) suggested that by requiring the mother to make choices on a scale point we may be creating illusions about childrearing and losing important variations.

Other serious problems have been identified by Radke-Yarrow (1963); for example the retrospective nature of the interview regarding feelings of the past is highly unreliable and raises questions of validity as well. Most questionable of all is the suggestion of causal relationship between the mother's and child's actions: a relationship which is most highly contaminated by the lack of independent sources of data.

Although these methodological problems may at first seem unsolvable several conclusions may be proposed as to the effects of the interview method for obtaining reliable and valid knowledge of parent-child relations. If the critisms have pondered heavily in disfavor of this method we hope that these points will stimulate others to search for valid solutions. In a more positive form Radke-Yarrow (1963), who is one of the few to have studied this special field, proposed more than a decade ago the following:

(1) to deal with the actual behavior of mother and child;
(2) to search for a broader substantive base of childrearing variables by considering additional variables:
(3) to concern ourselves with individual differences in parental behavior;
(4) to deal with interactions and to abandon the unrealistic point of view of the mother - doing - to - the - child;
(5) design sutdies which will defend more cautiously causative inferences.

In reaction to these recommandations it was not surprising to see that recently investigators have relied substantially less on the i.e. the laboratory observation method. Although the interview is still used today and has not been abandoned completely we note that it may serve the purpose of exploring new areas and variables as well as confirming data which may have been gathered by other methods.

OBSERVATION OF STRUCTURED INTERACTION IN LABORATORY

Some researchers have used very unstructured situations in the home (e.g. Baldwin et al, 1949). However the opposite pole also exists: for example, those situations where a highly structured and standardized setting in the laboratory provide an opportunity to study parent-child interactions. Hess and Shipman (1967) provide an excellent example of maximum control of stimuli and conditions in the experimental laboratory. The outstanding advantage of this method is that external stimuli affecting the child are kept constant and that therefore the situations become reasonably comparable.

There are basically three types of investigations that have structured the interaction situation. The first is interested in the parents' reactions to the child's behavior which is task-oriented or cognitive (e.g. Hess & Shipman's (1967) study which focused on parents' reactions to the child's achievement behavior). The second measures the reciprocal influence of mothers' and infants' behavior, e.g. a study of the interaction of family members in response to simple specific stimuli[1] The third type focuses on interaction in a structured verbal discussion, such as Guttman's (1971; 1972) experiments involving adolescents and their parents' verbal responses to specific situations.

The advantages of using any one or a combination of these methods are that the setting is highly controlled, structured and standardized. These factors ensure that the external stimuli are constant and that the situations become comparable.

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[1] Lytton 1971, for a complete review.

Concurrently, we must realize the limits of the structured laboratory observation method. In studies which centered on child behavior which was task-or problem-oriented the structured situation was used effectively. However, investigators have found this same method unsuitable in the study of behavior of parents in reaction to problem areas such as misdemeanor or even delinquency. In summary, the laboratory method in a structured situation appears to be highly effective in selective areas of parent-child interactions (e.g. task-oriented situations) and much weaker in problem areas.

Another limitation of this method is the capacity for generalization. It can be argued, as did Baumerind (1966), that the rigor of control of stimuli in the experimental situation is only an illusory advantage, since what must be in doubt is the generalizability of the data from the strictly defined laboratory situations to the natural situations in which the child grows up and becomes socialized. In this light it seems appropriate to use the ecological methods, employing less rigorous control, where there is a normal flowing interactions situation. For example, how do mother and child interact in a conflict situation such as when established house rules are violated. Lautrey (1973), Hart (1957), as well as others have established questionnaires which tap many areas of conflict situations. Perhaps role-playing of these situations in a structured laboratory setting may be representative of actual conflict situations and therefore provide data from which we can generalize. Hoppe, Kagan and Zahn (1977), have used the role-playing technique experimentally in an attempt to explain cultural differences in mother-child conflict resolution patterns.

On the other hand, another plausible solution to the problem in lack of generalizability may be in studying specific classes of behavior that are both significant and manipulatable. For example, one may initially study task-oriented behavior in the experimental laboratory and at a later time verify the reliability and significance of the findings with the aid of other methods such as the interview.

The structured laboratory method of observation offers the highest degree of control of the behavior and stimuli that are presented in parent-child interaction. However, a fanatic application of this policy will not account for the natural context and behaviors and careful considerations must be given regarding the generalization of results.

OBSERVATION OF UNSTRUCTURED INTERACTION

Lytton (1971) listed a great number of researchers who actually employed unstructured observations. There are basically two locations where observations may take place: One, is in the laboratory, for example Bing (1963) observed the mother-child interaction in a free play situation. Secondly, the home may be used as the setting for unstructured observation; this method has been extensively used in the past by such researchers as Baumerind (1967) and Moss (1967) who tried to relate childrearing practices to different patterns of child behaviors. Both variations of this method enjoy the advantage of having at least standardized external stimulations such as the kind and quantity of toys used. Furthermore, it is favored because the type of behaviors observed are spontaneous and are not subjected to the mother's interpretation of how and what the child does. In contrast to other methods which depend totally on the mother as a source of information, this method places the child in a set situation and then the experimenter records what actually happens. (Of course, there are different methods used to record these observed behaviors and these will be dealt with in detail further below).

The two types of settings have slightly different advantages. On the one hand, the home setting is not standard from one family to another, yet the home provides a familiar set of conditions which may reduce inhibitions in the parent-child interaction. On the other hand, although the laboratory setting maintains a standardized set of external conditions, the degree of natural and spontaneous reactions emitted in a

session might be hindered. From practical experience in laboratory observations of children, one may aruge that there is a rather quick habituation effect to the laboratory setting and that given one or two habituation sessions most children will feel quite at "home" in the laboratory. So, provided that one is measuring those parent-child variables which are significant and relevant to the families, and knowing whether families are more confortable in the laboratory or at home, we have here a reliable method for tapping parental variables.

NATURALISTIC OBSERVATION IN THE HOME

The major problem of naturalistic observation is the observer himself. We recall that with the interview one of the difficulties was the interviewer because he was part of the measuring instrument. This problem was almost nonexistant in objective questionnaires and minimized with the laboratory situation where the observer is placed behind a one-way view mirror.

In the naturalistic method the observer is concurrently a source of crucial strength as well as crucial weakness. The first hand nature of the data is one of the strong points of this method and contrasts sharply to other methods which employ the mother in this role. Yet the observer is subjected to first-hand observations which he must later derive inferences about constructs. Somehow, with experience and some training, he must analyse information and make an inference that the behavior is a manifestation of a construct such as "dependence" or "dependent behavior" or even "warm loving". This observer-inference problem is the main difficulty of this method and may be detected in two ways: on the one hand, the observer can make quite incorrect inferences perhaps due to strong yet unconscious social attitudes and personal biases; and on the other hand, if we assume that he is totally objective and unbiased, then he is also likely to make inadequate observations. For example, suppose that an observer knows nothing about authoritative attitudes of parents. In a

sense any observation he makes will not be biased yet they risk being inadequate or inappropriate. So, in effect, observation of human behavior requires competent knowledge of that behavior. In the case where correct (and trained) inferences are maximized, the strength of the naturalistic method is that it can relate the observed behavior to the constructs or variables under study. Competent observers and well-made observations help bridge the gap between behavior and construct.

One of the most ambitious attempts to measure parent behavior in natural settings is the work of Baldwin et al. (1949). Observers visited homes and rated the behavior of parents on an observation rating scale of 30 items. The items consisted of bipolar adjective pairs such as disapproving-approving, rejecting-devoted, dictatorial-democratic, and so on. In their study, one may notice that a high degree of inference was required of the observer. Subsequently, the researchers found that the 30 items grouped themselves into a smaller number of factors such as warmth, democracy and indulgence.

The other chief objection to this method is the argument which contests the supposed "naturalness" of behavior in the family when the observer is present. It must be remembered that the predominant source of distortion attributable to subjects in a "social desirability" set which-in passing - is present in one form or another in any attempt at behavioral observation. The expectations of both the investigator and the family members can have an influence on performance. The effects of these expectations, particularly when they are not clearly recognized, can be quite subtle. (Riskin & Faunce, 1972; Desportes, 1975)

Overall we may conclude that investigators who prefer to use this method over others must be willing to accept two basic assumptions as a price for the benefits received; according to Lytton (1971) the two assumptions are:

a) the researchers have reduced the "social desirability" set to the minimum possible and
b) they have accepted that their data reflect "interaction - in - the presence - of - observer".

ANALYSIS OF DATA

An important issue arises when one attempts to record the interaction of parent-child behaviors and make these observations amenable to analysis. In the past, a wide range of methods have been used to deal with this issue; in Lytton's (1971) review, the five most prominant methods of recording data can be ordered from the most global, that is, those giving least information on actual behavior and dealing most in abstract, to the most specific - those giving most information on actual behavior and abstracting least.

1. Ratings after observation. The actual behavior is not noted but ratings on global characteristics of parents or children are made after the observation.

2. Narrative style summaries. Observations are summarized after the visit with unlimited selectivity.

3. Precoded behavior categories. This method implies that the investigator has determined beforehand - by hunch or theory - that he is interested only in certain aspects of the behavior observed and focus on these, noting their frequency by means of coded symbols.

4. Selective narrative record. In using this method one selects certain aspects of the interaction and the observer makes a partial narrative record of such instances on the spot.

5. Specimen record. This method provides a complete record of the behavior observed and thus it provides the greatest amount of information and abstracts the least.

Although the third and fourth method have been the most productive judged by the number of investigationscompleted, they do not approximate as closely to the actual events as the specimen record or a complete videotaping would. In the future we foresee a method which has pre-coded categories relating to interactional sequences (Guttman, 1977). This method consists in recording the dyadic sequences in the process of interactional relationships.

In accordance with Lytton (1971), there is a necessity to maintain a delicate balance between a large amounts of quantitative data and qualitative data. In turn, there is a need for the richness of specific data as collected by the latter three methods as well as the quality of data provided by the first two methods. It seems that a happy union between the two poles of this dimension can be found if we reconsider the researcher's principal objective in the measurement of parent-child interactions: to be consistant in the process of codification of data and to eliminate as much as possible, personal bias.

If consideration is given to the degree of variability of behavior which can be detected by the five methods reviewed here, i.e. Questionnaire, Interview, Structured and non-structured laboratory and naturalistic, no conclusive statement may be made. By way of comparison one notes that the Naturalistic Observation in the Home and Interview methods may account for quite a wide range of (parent-child) behaviors which occur. Yet, to obtain this kind of information it is necessary to obtain verbally proficient parents for the interview method and behaviorally expressive parents for the former three methods of observation. If, on the other hand, we consider the two laboratory situation methods (i.e. structured and unstructured) we note that they may limit the range of behaviors observed as well as exclude the usual kind of behavior expressed in the home setting.

Although these disadvantages are widely accepted an interesting paradox appears: in the past, laboratory situations have focused on a greater variety of behaviors than the naturalistic behavior method. This might be explained by the inability of the naturalistic method to sufficiently minimize the effect of social desirability. Presently, these conflicting circumstances do not permit any conclusive statement regarding which method is favored to obtain a great variance of behaviors; yet the paradox still remains true that laboratory situations with a structured task have been, in the past, able to elicit the greatest range of behavior; for example: position, locomotion, aggression, guilt reaction. Considering the attractive advantages like standardized procedures one finds it difficult to reject these methods. It seems, that one must always choose a one-method approach; yet we contend that one may use a multiple procedure approach in order to gain the profits of combined methods.

RELIABILITY AND VALIDITY ISSUES

When one uses retrospective types of observational methods for recording parent-child interaction large errors in parental reports arise from lack of reliability and consistency. There are basically two types of reliability: the stability of ratings obtained from two different coders or observers and the stability of the behavior over time. The first problem may be solved by a system of regular monitoring of observers maintained at all times throughout the research thus ensuring reliability between two raters. Another form of precaution is to use the method of inter-judge reliability which can further assure consistancy in observation. The second problem of instability over time deserves more attention. In the past, there have been wide discrepancies in findings; Merrill Bishop (1951) found that the behavior ratings of mothers over two similar sessions had an average correlation of .71. On the other hand, Hatfield et al. (1967) found correlations of .3 to .4 between two sessions. Others, like Becker & Krug (1965) have supported the latter position especially in view of the famous PARI as developed by Schaefer. In consideration of these differences

of opinion and the former discussion of this same problem (i.e. in the Questionnaire Section) researchers must be aware of the particular aspects of parental attitudes which do not change drastically over time and can be measured across two different sessions as compared to some that do change over time. For example, some methods of control used by parents tend to represent a regular pattern of parent-child interaction (Lytton, 1971).

One must also recognize the need to account for "age-specific" parents. Indeed the ages of parents as well as those of children must be controlled for. Other variables to account for are socio-economic class (Hess & Shipman, 1967) as well as sex differences and favoritism (Bell, 1958). In general, the two most important factors in increasing the reliability over time are:

1) to single out relevent parental attitudes and interactions which are constant across time and
2) the number of behavioral events should be as large as possible to increase the representativeness of sampling.

CONCLUSION AND SOLUTIONS

One of the most common weaknesses permeating throughout all of the methods of data collection described above is the inability to control for social desireability effects which affects the reliability of the data. We have noted that in the presence of an observer parents have a tendency to act in an artificial manner as well as describe retrospective events and behaviors, in compliance to the dominant conventional norms. Since most methods are to some extent affected by this problem it would seem rather impossible to favor one particular method as having more reliability and validity in measurement of parent-child interaction, over the other methods. At this moment, it is difficult as well as inappropriate, in view of the ethical problems that would emerge, to observe and report all of the "natural" behaviors that families would show in their natural milieu - the home.

A longitudinal study enables one to examine the relationships of childhood characteristics and experiences to current and later behavior, and to analyse significant aspects of the child-environment interaction in an anterospective manner (Chess, 1979). On the other hand, this kind of study gathers enormous amount of data, and choices must be made as to what to record and analyse. There is always the possibility of making the wrong decisions which cannot be corrected by going backwards in time, at best, we must be satisfied to add some pieces to the puzzle, leaving others to use our efforts and filling in the gaps. In addition, this strategy of research enables the investigator to examine individual differences in parent-child interaction, as well as group differences reflecting social class differences and level of intellectual functioning.

This method thus avoids the distortions of recall that occur as a result of the passage of time; the forgetting exactly when and how events took place and remembering through the influence of present personality, hopes and fears. Retrospective recollections also tend to reflect theories of causation, guilt and blame.

Indeed longitudinal studies are drawn out in time, expensive and complex when contrasted to cross-sectional studies which are economical, simple and can be carried out in a short space of time. Yet, there are certain types of information that can only be obtained through the longitudinal study. In effect, longitudinal data are necessary to identify variability of progress as smooth or continuous, or whether it proceeds in periods of spurts and periods of integration. One may also find that group trends at various ages as found by cross-sectional studies have created an illusion that developmental patterns are being identified. What seems to emerge from these considerations is a need for a theoretical position which demands that the behavioral attributes of one person are to be considered as a function of the reciprocal relationship in his/her interaction with environmental opportunities, expectancies, stresses and cultural context. This point of view examines the individual interacting

in the particular environmental context and interprets the findings according to a systems model (Haley, 1964; Bertalanffy, 1968; Walberg and Marjoribanks, 1976). The longitudinal type of study, thus, represents one of the best mediums through which to analyse the nature of a continuously interactive process.

One of the best attempts in this line of research was made by Chess (1979) in studying the process in which the temparament of the child interacts with the conditions in his immediate family and school environment. Others like Mednick and McNeill (1968) have highlighted the high-risk-group method in schizophrenic and other clinical populations. This type of longitudinal study of young "normal" populations at high-risk for schizophrenia has distinguished premorbid characteristics of those schizophrenics who suffer breakdown. These methods which have developed from experimental-prevention research models can provide better conclusions concerning parent-child interactions than the correlational (cross-sectional , retrospective) research models.

Due to the complexity of studying the influencing variables within an interactional process it is necessary to provide a model which encompasses all individual factors. Two recently published articles outlined a confluence model which attempted to explain patterns of relationship between measures of intellectual ability and such family configuration variables as birth, order, family size, and sibling birth intervals (Zajonc & Markus, 1975; Zajonc, 1976). The first article reviewed the literature on the topic and suggested a model to account for the negative correlation which has been repiatedly found between family size and scores on various tests of intelligence, the variable effects of birth order, and interbirth spacing on these scores. The second article demonstrated that regional, ethnic, national and temporal differences in intellectual tests performance are, to a significant degree, associated with differences in family configurations.

The confluence model is based on the assumption that cognitive growth is influenced by the quality of an individual's immediate intellectual environment, primarily that of the family; three findings have further supported this model: (1) increasing family size is linked to lower intellectual levels since the addition of a newborn to the family lowers the average intellectual level from what it was previously; (2) order of birth has no independent impact on intellectual growth; and (3) the magnitudes of the intervals between the births of siblings is a significant factor: longer birth intervals leads to a relatively higher average intellectual level possibly because older siblings have had more time to mature. (Markus and Zajonc, 1978).

Having presented a system model of family behavior and interaction, there emerges the problem of assessing the changes over time. In addition to general problems of longitudinal studies discussed above (i.e. time & money etc.) further complications arise from characteristics peculiar to the cohorts studied and with the effects of cultural conditions prevailing at the time of assessment. A recent study by Achenback (1978) has outlined some of the sources of error as well as various research strategies for separating the effects of age, cohort and time of assessment.

Because longitudinal research is slow and expensive, it sometimes attemps to use cross-sectional data to infer age changes in behavior. Here there is a great danger in assuming that there are no influences in the birth order, the SES, cultural experience, health, and schooling within the groups representing the developmental ages. On the contrary, the previously cited studies by Markus and Zajonc (1978) and Zajonc (1976) contest that family variables have a consjderable influence on the development of the child's personality and intelligence.

Secondly, a fundamental problem also arises from the longitudinal design which can mislead the results: selection of one cohort

group only may obscure the fact that what appears to be an age-related change in behavior is either peculiar to that cohort or is manifested by other cohorts at that point in history; regardless of their ages.

Because age, cohort and cultural-historical effects may be confounded in conventional cross-sectional designs, it is important to separate these variables as explicitly as possible in any study of development. Achenback (1978) has provided several experimental design strategies which avoid these particular problems. One method is the longitudinal sequential design where the researcher assesses several birth year cohorts over the same longitudinal period. A second design - the cross-sectional sequential design - uses several cohorst at several differents points in time. (see fig. 1). In the time-lag sequential design, two or more samples are assessed from each cohort as they reach different ages in different years.

Include Fig.1 about here

Birth Cohort	Age 5	6	7	8	9
Longitudinal Sequential					
1971			1978	1979	1980
1972		1978	1979	1980	
1973	1978	1979	1980		
Cross-sectional sequential					
1971			1978	1979	1980
1972		1978	1979	1980	
1973	1978	1979	1980		
Time-lag sequential					
1971			1978	1979	1980
1972			1979	1980	1981
1973			1980	1981	1982

Fig. 1 Adapted from Achenback (1978).

Despite all of the difficulties related to observational methods, the experimental limitations of longitudinal studies and methodological problems in evaluating the validity of traditional methods, there remains the possibility of comparing the various methods to each other. Some attempts in this direction have not been very conclusive.

Kohn and Carroll (1960) compared the responses of fathers, mothers and the child on the importance of support and constraint in child rearing with the use of the interview method. Concordance between the three points of view was reached only 50% of the time; however, the agreement is most frequently observed between the parents only. Radke-Yarrow et al. (1968) compared evaluations taken by the interview and direct observation methods on the same behaviors; the correlation coefficients between the two methods oscillated between .30 et .40. In accordance with Lytton (1971), we must admit that there are various existing methods, all of which contain inconveniances; yet, our choice rests on accepting one or a combination of methods which contain the least disadvantages. The conclusion to be drawn is that not one method alone can do justice to the observation of family interactions; nor can it be sufficiently reliable and valid.

In view of the existing difficulties in the selection of the appropriate research instruments and experimental design, the study by Bing (1963) is worthy of mention. In her study Bing used a combination of:

(1) the interview;

(2) the questionnaire and

(3) mother-child interaction situation in examining the effect of maternal childrearing practices on the development of differential cognitive abilities. Others have also adopted a multi-technique approach of measuring different aspect of maternal behavior. For example, Hess and Shipman (1967) have suggested that differences of socio-economic status existed between different strategies of maternal control. The results were obtained by means of the

interviewing technique where a series of projective questions were put to the mother regarding
a) what she would tell her child on the first day of school and
b) hypothetical situation where the child commited some minor misbehavior. They also used a few laboratory teaching tasks where the mother was expected to teach her child different sorting tasks and her behavior in this interaction was observed and recorded.

Evidently, there exists numerous advantages in using a multidimensional approach in contrast to a unidimensional one. On the one hand, the data collected by one method (i.e. interview) may be confirmed as well as enriched by concurrently using it with another method (i.e. structured laboratory). This process can accrue both the reliability as well as the external validity of the observations. On the other hand, if one takes a puritant stand on this issue, one could object to this form of empirical validation with the following rationale: if all methods are subject to the same bias, there could easily exist a high concordance between each of the methods, and at the same time, the methods could still remain not valid. (Lautrey, 1973).

In order to resolve this crucial problem one must recurr to other forms of validity. That is, if one cannot totally rely on empirical forms of validity, then one may seek hypothetico-deductive forms: the application of an implicit theoretical model. In our particular case, this would mean that the same theoretical model can measure child rearing practices as well as the development of intelligence. In our opinion, the theoretical model which most adequately explains the problem is that of Piaget. That is, if the observed findings confirm the postulates of the theory, then we have a valid method of observation as well as a valid theoretical model from which the hypotheses first emerged.

According to this perspective, if the hypotheses regarding the influence of child rearing practices on the development of intelligence are confirmed, then this would consolidate the validity of the instrument

with which child rearing styles were observed as well as validate aspects of Piaget's theory form which the hypotheses were formulated.

In effect, one advantage of the present method is to include the observed parent-child relations within a theoretical model from which they were derived and to integrate them into a wider scope. By doing so, we would supersede correlational explanations of variables by introducing causal models of explanation. Furthermore, it is our opinion that the methodological precautions here prescribed in the sue of the multidimensional approach can be superseded by the hypothetico-deductive model. Consequently, from a theory of cognitive development we may generate implicit hypotheses of parent-child intereactions which, in turn, may serve to evaluate the theory of development of intelligence.

This aspect will be developed more fully in a forthcoming study of the problem in the selection of variables to study in parent-child relations as well as the choice of a theory of development of intelligence.

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